IN THE CLAIMS

Following is a complete set of claims as amended with this response, which includes amendments to claims 1, 3-20 and adds new claims 51-74.

1. (currently amended) A method of detecting the presence or measuring the quantity of a target analyte in a sample reagent comprising ~~the steps of~~:

contacting a microfabricated electrochemical biosensor with the sample reagent, the microfabricated electrochemical biosensor comprising: (a) a substrate; and (b) at least two electrically conductive electrodes fabricated on the substrate by integrated circuit technology, each of the electrical conductive electrodes consisting of a single layer of an electrically conductive material;

containing the sample reagent in contact with the conducting electrodes;

measuring a electrical signal output from the microfabricated electrochemical biosensor; and

determining from the signal output the presence and/or quantity of the target analyte in the sample reagent.

2. (original) The method of claim 1, wherein the electrochemical biosensor further comprises an adhesive underneath each of the electrodes, the adhesive allowing for better adhesion of each of the electrodes to the substrate.

3. (currently amended) The method of claim 1, ~~2~~ wherein the sample reagent is a biological fluid containing macromolecules.

4. (currently amended) The method of claim 1, ~~2~~ wherein the sample reagent is a biological fluid containing ionic molecules or atoms.

5. (currently amended) The method of claim 1, ~~2~~ wherein the substrate is selected from the group consisting of silicon, gallium arsenide, plastic and glass.

6. (currently amended) The method of claim 1, ~~2~~ wherein the substrate comprises a material made out of silicon.

7. (currently amended) The method of claim 1, ~~2~~ wherein the electrically conductive material is selected from the group consisting of gold, aluminum, chromium, copper, platinum, titanium, nickel and titanium.

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8. (currently amended) The method of claim 1, ~~2~~ wherein the electrically conductive material is gold.

9. (currently amended) The method of claim 2, wherein the adhesive is selected from the group of consisting of chromium, titanium, and glue.

10. (currently amended) The method of claim 2, wherein the adhesive comprises chromium.

11. (currently amended) The method of claim 1, ~~2~~ wherein the substrate further comprises a well structure containing at least one of the electrodes.

12. (currently amended) The method of claim 1, ~~2~~ wherein the electrochemical biosensor comprises at least three electrically conductive electrodes.

13. (currently amended) The method of claim 12, wherein each of the electrically conductive electrodes consists of a single layer of gold.

14. (currently amended) The method of claim 1, ~~2~~ wherein ~~the step of~~ determining from the signal output the presence and/or quantity of the target analyte in the reagent further comprises ~~the steps of~~:

calibrating the electrochemical biosensor with a first calibrating solution that contains a known amount of the target analyte to be detected and a second calibrating solution that contains an undetectable amount of the target analyte to be detected;

obtaining a reference signal output; and

comparing the reference signal with the measured signal to determine the presence and/or quantity of the molecules in the sample reagent.

15. (currently amended) The method of claim 14, wherein the substrate is selected from the group consisting of silicon, gallium arsenide, plastic and glass.

16. (currently amended) The method of claim 14, wherein the electrically conductive material is selected from the group consisting of gold, aluminum, chromium, copper, platinum, nickel and titanium.

17. (currently amended) The method of claim 14, wherein the electrically conductive material is gold.

18. (currently amended) The method of claim 14, wherein the adhesive is selected from the group of material consisting of chromium, titanium, and glue.

19. (currently amended) The method of claim 14, wherein the substrate further comprises a well structure underneath at least one of the electrodes.

20. (currently amended) The method of claim 14, wherein a surface on at least one of the electrodes is surface modified for anchoring macromolecules on the surface.

21-50. (canceled)

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51. (new) The method of claim 1, wherein the electrodes are in contact with the substrate.

52. (new) The method of claim 1, wherein the electrically conductive material associated with each electrode extends from each electrode to an electrical pad positioned on the substrate.

53. (new) A microfabricated electrochemical biosensor, comprising:

a substrate; and

at least two electrically conductive electrodes formed on the substrate, each of the electrical conductive electrodes including of a single layer of an electrically conductive material.

54. (new) The method of claim 53, wherein the electrodes are in contact with the substrate.

55. (new) The method of claim 53, wherein the layer of electrically conductive material associated with each electrode extends from each electrode to an electrical pad positioned on the substrate.

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56. (new) The biosensor of claim 53, wherein the electrodes are exposed to atmosphere.

57. (new) The biosensor of claim 53, further comprising:

a self-assembly-monolayer formed on at least one of the electrodes.

58. (new) The biosensor of claim 53, further comprising an adhesive between the electrodes and the substrate.

59. (new) The biosensor of claim 53, wherein the substrate is selected from the group consisting of silicon, gallium arsenide, plastic and glass.

60. (new) The biosensor of claim 53, wherein the substrate comprises a material made out of silicon.

61. (new) The biosensor of claim 53, wherein the electrically conductive material is selected from the group consisting of gold, aluminum, chromium, copper, platinum, titanium, nickel and titanium.

62. (new) The biosensor of claim 53, wherein the electrically conductive material is gold.

63. (new) The biosensor of claim 53, wherein the substrate further comprises a well structure containing at least one of the electrodes.

64. (new) The biosensor of claim 53, wherein the electrochemical biosensor comprises at least three electrically conductive electrodes.

65. (new) A method of forming a microfabricated biosensor, comprising: providing a substrate; and

forming at least two electrically conductive electrodes on the substrate, each of the electrical conductive electrodes including of a single layer of an electrically conductive material.

66. (new) The method of claim 65, wherein the electrodes are formed such that the electrically conductive material is in contact with the substrate.

67. (new) The method of claim 65, wherein the substrate includes a layer of silica over a layer of silicon.

68. (new) The method of claim 65, wherein the electrodes are formed such that the electrically conductive material extends from each electrode to an electrical pad positioned on the substrate.

69. (new) The method of claim 65, wherein the substrate is selected from the group consisting of silicon, gallium arsenide, plastic and glass.

70. (new) The method of claim 65, wherein the electrically conductive material is gold.

71. (new) The method of claim 65, wherein the substrate includes a well and at least one of the electrodes is formed in the well.

72. (new) The method of claim 65, wherein the electrochemical biosensor comprises at least three electrically conductive electrodes.

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73. (new) The method of claim 65, wherein integrated circuit fabrication techniques are employed to form the electrodes on the substrate.

74. (new) The method of claim 65, wherein a lift-off process is employed to form the electrodes.